# CITY OF BROCKTON RETIREMENT SYSTEM

Actuarial Valuation Report

January 1, 2006

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# **Report Summary:**

<u>nlights</u>	<u>January 1, 2005</u>	<u>January 1, 2006</u>
Contributions		
Funding Schedule FY 2007	\$19,395,599	\$10,340,234
Funding Schedule FY 2008	\$20,009,377	\$10,606,555
Funded Ratios		
GAS No. 25	62.1%	86.7%
<u>Participants</u>		
Actives	1,843	1,857
Retirees and Beneficiaries	1,034	1,037
Vested	0	0
Inactives	224	246
Disabled	<u>181</u>	<u>183</u>
Total	3,282	3,323
<u>Payroll</u>		
Payroll of Active Members	\$69,027,871	\$69,892,659
Average Payroll	37,454	37,637
Normal Cost		
Employer	4,261,799	4,118,450
Employee	5,507,373	5,628,453
Administrative Expenses	<u>550,000</u>	600,000
Total	10,319,172	10,346,903
Actuarial Accrued Liabilities		
Actives	164,615,641	173,954,428
Retirees, Beneficiaries, Disabilities and Inactives	211,745,729	225,550,682
Total	376,361,371	399,505,110
Actuarial Value of Assets	<u>233,723,778</u>	346,311,739
Unfunded Actuarial Accrued Liabilities	\$142,637,593	\$53,193,371

# **Introduction**

This report presents the City of Brockton actuarial valuation findings as of January 1, 2006, under the Commonwealth of Massachusetts Retirement System.

The actuarial valuation is based on:

- Provisions Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2006.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the City of Brockton Retirement System
- Actuarial assumptions approved by the Retirement Board

The valuation and appropriation forecast are prepared in accordance with Chapter 32 of the M.G.L. as of January 1, 2006.

The valuation and forecast do not account for:

- Any subsequent changes in the law
- Chapter 32 of the M.G.L., Section 3(8)(c) transfers between systems
- State-mandated benefits
- Cost-of-living increases granted to retired members between 1982 and 1997. The
  cost of these benefits has been assumed by the State under Proposition Two and
  One-Half.

# **Actuarial Experience**

In performing the actuarial valuation, various assumptions are made regarding such factors as mortality, retirement, disability, and withdrawal rates as well as both payroll, salary increases, and investment returns. A comparison of the current valuation and the prior valuation is made to determine how closely actual experience corresponded to anticipated occurrences. This analysis of the system provides insight into the overall quality of the actuarial assumptions and helps explain any change in the annual appropriation.

During the year, the city of Brockton issued a Pension Obligation Bond that reduced the unfunded actuarial accrued liability by \$100,000,000. The resulting unfunded liability was \$6,009,377 larger than expected on January 1, 2006.

The increase is the result of net unfavorable actuarial experience during the preceding years. The primary components of the unfavorable experience were retiree mortality and an annual investment return on assets of 5.7%, less than the 8% assumption. These caused the unfunded accrued liability to increase by \$4,590,293 and \$3,188,997, respectively. There was an additional loss of \$3,091,988 due to data corrections and other actuarial assumptions. The loss was offset by a gain of \$4,861,901, due to lower than expected salary increases.

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# **Actuarial Costs and Liabilities:**

## **Normal Costs**

The normal cost is the sum of the individual normal costs determined for each member as if the assumptions underlying the cost determinations had been exactly realized. An individual normal cost represents that part of the cost of a member's future benefits which are assigned to the current year as if the costs are to remain level as a percentage of the member's pay. Benefits payable under all circumstances (i.e., retirement, death, disability, and terminations) are included in this calculation. Anticipated employee contributions to be made during the year are subtracted from the total normal cost to determine employer normal cost. The total normal cost is divided by total payroll to determine the normal cost as a percent of pay. The normal cost is shown in Table I.

Та	able I	
	<u>January 1, 2005</u>	January 1, 2006
Superannuation	\$6,684,936	\$6,784,853
Termination	1,013,535	835,921
Death	562,596	496,466
Disability	1,508,105	1,629,663
Administrative Expenses	<u>550,000</u>	600,000
Total Normal Cost	10,319,172	10,346,903
% of Pay	14.9%	14.8%
Employee Contributions	5,507,373	5,628,453
% of Pay	8.0%	8.1%
Employer Normal Cost	\$4,811,799	\$4,718,450
% of Pay	7.0%	6.8%

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# **Present Value of Actuarial Accrued Liabilities**

The actuarial accrued liabilities (AAL) represents today's value of all benefits earned by the actives and inactives. The AAL can be compared to the assets to determine the funded status of the Plan. The value of these earned benefits is shown in Table II below.

Table II		
	<u>January 1, 2005</u>	January 1, 2006
Actives		
Superannuations	\$152,297,023	\$153,849,952
Termination	(2,123,010)	2,980,849
Death	4,146,463	5,557,207
Disability	10,295,165	11,566,420
Retirees and Inactives		
Retirees and Beneficiaries	\$156,779,980	166,008,847
Vested	\$0	0
Terminated (Refund)	\$1,223,642	1,168,817
Disabled	\$53,742,107	<u>58,373,018</u>
Total	\$376,361,371	\$399,505,110

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# **Present Value of Future Benefits**

The present value of future benefits represents today's value of all benefits earned by the inactive participants as well as all benefits earned and expected to be earned in the coming years by the active participants. The difference betwee the present value of future benefits and the present value of actuarial accrued liabilities is the value of benefits to be earned in the coming years. The value of the total expected benefits is shown in Table III.

Table II	I	
	January 1, 2005	January 1, 2006
Actives		
Superannuation	\$218,571,911	\$220,227,992
Termination	6,476,785	6,542,899
Death	8,323,613	10,028,799
Disability	26,829,717	29,608,685
Retirees and Inactives		
Retirees and Beneficiaries	156,779,980	166,008,847
Vested	0	0
Terminated (Refund)	1,223,642	1,168,817
Disabled	53,742,107	<u>58,373,018</u>
Total	\$471,947,755	\$491,959,057

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# **Funded Status and Appropriations:**

# **Market Value of Plan Assets**

The trust fund composition on a market value basis is shown in Table IV.

Table IV				
	<u>January 1, 2005</u>	January 1, 2006		
Cash equivalents	\$8,317,254	\$43,411,383		
Short term investments	4,263,477	0		
Fixed income securities	66,636,117	90,631,924		
Equities	109,877,808	162,612,388		
International	24,581,534	31,854,934		
Real Estate	9,640,940	8,986,091		
Alternative Investments	9,448,024	9,573,708		
Accounts receivable	1,249,265	865,583		
Accounts payable	(1,034,273)	(2,652,413)		
Accrued income	<u>743,632</u>	1,028,141		
Total Market Value	\$233,723,778	\$346,311,739		
Total Actuarial Value	\$233,723,778	\$346,311,739		

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# **Unfunded Actuarial Accrued Liabilities**

Under the Entry Age Normal Actuarial Cost Method, the Actuarial Accrued Liability represents what the accumulated assets would have been as of the valuation date if:

- current plan provisions and assumptions had always been in effect,
- experience conformed exactly to assumptions, and
- the normal cost had been contributed each year since inception.

The actuarial value of the Fund's assets as of the end of the prior year are subtracted from the Actuarial Accrued Liability (AAL) to determine the Unfunded Actuarial Accrued Liability (UAAL) as of the valuation date. Over time, annual pension contributions will accumulate Plan assets equal to the AAL, and the UAAL will be eliminated. Thereafter, annual contributions equal to the normal cost will keep the Plan's assets and liabilities in balance. The UAAL is developed in Table VI.

Ta	able VI		
		<u>January 1, 2005</u>	January 1, 2006
Actuarial Accrued Liability		\$376,361,371	\$399,505,110
Actuarial Assets		233,723,778	346,311,739
Unfunded Actuarial Accrued Liability		\$142,637,593	\$53,193,371
Funded Status		62.1%	86.7%

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# **Appropriations**

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Section 22D of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2028, full funding mandate for all accrued liabilities. The pension appropriation is the sum of the:

- Employer normal cost,
- Increasing amortization of the unfunded actuarial accrued liability by June 30, 2020 \$52,598,385 over 14 years with 2.5 % increasing payments
- Level amortization of the Early Retirement Incentive unfunded liability by June 30,2019 \$594,986 over 13 years
- Interest adjustment for payments deposited at the beginning of the fiscal year.

The pension appropriation is shown in Table VII.

Table VII		
	<u>January 1, 2005</u>	<u>January 1, 2006</u>
Normal cost	\$4,601,456	\$4,718,450
Amortization payment of the prior accrued liability	14,596,780	5,161,742
Amortization payment of 2002 ERI liability	72,437	69,703
Total cost	\$19,270,673	\$9,949,895
% of Pay	27.9%	14.2%
Fiscal 2007 cost	\$19,395,599	\$10,340,234
Fiscal 2008 cost	\$20,009,377	\$10,606,555

# **Appropriation Forecast**

The following exhibit forecasts employer and employee contributions over the next 32 years under the adopted funding schedule.

Note that the forecast is based upon an "open group" method. This method assumes that sufficient employees will be hired each year to keep the number constant. The total payroll of the system is expected to increase 4.5% per year. The employee contribution rate is expected to increase to 10.5% by 2028 as members contributing base percentages 5%, 7%, and 8% are replaced by new members, whose base contribution is 9%. Payments are assumed to be spread over the fiscal year.

The employer total cost, as a percentage of payroll, is expected to decrease gradually over the next 14 years until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. For FYE 2008, the total cost represents on average about 14.5% of payroll, decreasing to 11.4% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of about 5.0% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

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# **Appropriation Forecast**

Fiscal			Employer	Amortization	Employer	Employer	
Year		Employee	Normal Cost	Payments	Total Cost	Total Cost	Funded
<b>Ending</b>	<u>Payroll*</u>	Contribution	with Interest	with Interest	with Interest	% of Payroll	Ratio %**
2007	\$69,892,659	\$5,628,453	\$4,903,557	\$5,436,677	\$10,340,234	14.8	86.7
2008	\$73,037,829	\$5,966,840	\$5,035,772	\$5,570,783	\$10,606,555	14.5	87.5
2009	\$76,324,531	\$6,324,284	\$5,169,956	\$5,708,242	\$10,878,198	14.3	88.3
2010	\$79,759,135	\$6,701,816	\$5,306,020	\$5,849,137	\$11,155,157	14.0	89.2
2011	\$83,348,296	\$7,100,518	\$5,443,860	\$5,993,554	\$11,437,414	13.7	90.0
2012	\$87,098,969	\$7,521,532	\$5,583,360	\$6,141,582	\$11,724,942	13.5	90.9
2013	\$91,018,423	\$7,966,060	\$5,724,393	\$6,293,311	\$12,017,704	13.2	91.8
2014	\$95,114,252	\$8,435,363	\$5,866,811	\$6,448,833	\$12,315,644	12.9	92.8
2015	\$99,394,393	\$8,930,773	\$6,010,456	\$6,608,242	\$12,618,698	12.7	93.7
2016	\$103,867,141	\$9,453,688	\$6,155,148	\$6,771,638	\$12,926,786	12.4	94.7
2017	\$108,541,162	\$10,005,580	\$6,300,692	\$6,939,118	\$13,239,810	12.2	95.7
2018	\$113,425,515	\$10,588,000	\$6,446,870	\$7,110,785	\$13,557,655	12.0	96.8
2019	\$118,529,663	\$11,202,575	\$6,593,445	\$7,286,743	\$13,880,188	11.7	97.8
2020	\$123,863,498	\$11,851,022	\$6,740,157	\$7,394,664	\$14,134,821	11.4	98.9
2021	\$129,437,355	\$12,535,143	\$6,886,722	\$0	\$6,886,722	5.3	100.0
2022	\$135,262,036	\$13,256,837	\$7,032,828	\$0	\$7,032,828	5.2	100.0
2023	\$141,348,827	\$14,018,100	\$7,178,139	\$0	\$7,178,139	5.1	100.0
2024	\$147,709,525	\$14,821,032	\$7,322,286	\$0	\$7,322,286	5.0	100.0
2025	\$154,356,453	\$15,667,841	\$7,464,870	\$0	\$7,464,870	4.8	100.0
2026	\$161,302,494	\$16,560,850	\$7,605,460	\$0	\$7,605,460	4.7	100.0
2027	\$168,561,106	\$17,502,502	\$7,743,586	\$0	\$7,743,586	4.6	100.0
2028	\$176,146,356	\$18,495,367	\$7,878,742	\$0	\$7,878,742	4.5	100.0
2029	\$184,072,942	\$19,327,659	\$8,233,286	\$0	\$8,233,286	4.5	100.0
2030	\$192,356,224	\$20,197,404	\$8,603,784	\$0	\$8,603,784	4.5	100.0
2031	\$201,012,254	\$21,106,287	\$8,990,954	\$0	\$8,990,954	4.5	100.0
2032	\$210,057,806	\$22,056,070	\$9,395,547	\$0	\$9,395,547	4.5	100.0
2033	\$219,510,407	\$23,048,593	\$9,818,346	\$0	\$9,818,346	4.5	100.0
2034	\$229,388,375	\$24,085,779	\$10,260,172	\$0	\$10,260,172	4.5	100.0
2035	\$239,710,852	\$25,169,639	\$10,721,880	\$0	\$10,721,880	4.5	100.0
2036	\$250,497,840	\$26,302,273	\$11,204,364	\$0	\$11,204,364	4.5	100.0
2037	\$261,770,243	\$27,485,876	\$11,708,561	\$0	\$11,708,561	4.5	100.0
2038	\$273,549,904	\$28,722,740	\$12,235,446	\$0	\$12,235,446	4.5	100.0

<sup>\*</sup> Calendar basis

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#### GASB Statements No. 25 and No. 27

Effective for periods beginning after June 15, 1997, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 25 and 27. These statements, which replace GASB Statement No. 5, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

Footnote disclosures required by GASB Statement No. 25 and 27 include a description of the plan, a summary of significant accounting policies, and information about contributions, legally required reserves, and investment concentrations. As a result of the oversight of the Public Employees Retirement Administration Commission (PERAC) and the conversion of unpaid contributions to pension related debt, the Net Pension Obligation (NPO) as required by Statement No. 27 will effectively always be equal to \$0. The required disclosure information is shown in Table VIII.

	Table VIII				
		January 1, 2005	<u>January 1, 2006</u>		
(1)	Actuarial Accrued Liability	\$376,361,371	\$399,505,110		
(2)	Actuarial Value of Assets	233,723,778	346,311,739		
(3)	Unfunded Actuarial Accrued Liability	142,637,593	53,193,371		
(4)	Funded Ratio (2)/(1)	62.1%	86.7%		
(5)	Covered Payroll	\$69,027,871	\$69,892,659		
(6)	UAAL as a percentage of payroll: (3)/(5)	206.6%	76.1%		
(7)	Annual Required Contribution (ARC)	\$19,395,599	\$10,340,234		
(8)	Net Pension Obligation	\$0	\$0		

8.0%

4.8%

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Investment Return:

Rate of Salary Increase:

# PERAC Annual Statement APPENDIX PAGE 3 ACTUARIAL VALUATION AND ASSUMPTIONS

The most recent actuarial valuation of the System was prepared by Buck Consultants as of January 1, 2006.

The normal cost for employees on that date was:	\$5,628,453	8.1% of pay		
The normal cost for the employer was:	4,118,450	5.9% of pay		
The actuarial liability for active members was:		\$173,954,428		
The actuarial liability for retired members was:		225,550,682		
Total actuarial accrued liability:		399,505,110		
System assets as of that date:		346,311,739		
Unfunded actuarial accrued liability:		\$53,193,371		
The ratio of system's assets to total actuarial liability was		86.7%		
The principal actuarial assumptions used in the valuation are as follows:				

#### SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio	Covered Payroll	UAAL as a percent of Covered Payroll
	(a)	(b)	(b-a)	(a/b)	(c)	(b-a)/c
01/01/06	\$346,311,739	\$399,505,110	\$53,193,371	86.7%	\$69,892,659	76.1%
01/01/05	\$233,724,000	\$376,361,000	\$142,638,000	62.1%	\$69,028,000	206.6%
01/01/04	\$208,286,000	\$359,825,000	\$151,539,000	57.9%	\$67,054,000	226.0%
01/01/03	\$168,502,000	\$342,625,000	\$174,123,000	49.2%	\$65,032,000	267.7%
01/01/02	\$191,921,000	\$326,280,000	\$134,359,000	58.8%	\$58,793,000	228.5%
01/01/01	\$198,328,000	\$297,018,000	\$98,690,000	66.8%	\$56,667,000	174.2%

Attach Copy of Current Approved Funding Schedule

# **EXHIBITS**

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#### Age/Service Distribution with Salary as of January 1, 2006

Attained Age	Average Salary <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0
20-24	40 16,440	0	0	0 0	0	0	0	0	0	40 16,440
25-29	112	12	0	0	0	0	0	0	0	124
	22,713	34,915	0	0	0	0	0	0	0	23,894
30-34	92	62	9	0	0	0	0	0	0	163
	32,518	55,413	51,829	0	0	0	0	0	0	42,293
35-39	86	90	37	8	0	0	0	0	0	221
	27,405	47,972	54,506	57,317	0	0	0	0	0	41,401
40-44	87	85	38	21	16	0	0	0	0	247
	22,622	37,277	46,723	62,912	65,418	0	0	0	0	37,571
45-49	71 24,828	95 28,123	40 39,156	33 65,663	23 59,733	6 55,420	0	0	0 0	268 36,811
50-54	53	80	42	33	26	37	13	1	0	285
	25,924	30,708	32,122	38,309	56,698	72,697	62,574	39,450	0	40,213
55-59	43	43	31	42	33	24	39	12	2	269
	24,427	26,428	27,767	35,216	42,200	65,809	69,139	48,737	45,924	40,415
60-64	20	25	21	25	23	10	19	16	4	163
	25,441	26,615	36,854	32,978	34,801	57,884	52,328	59,878	54,803	38,794
65-69	9 20,532	10 16,284	4 27,204	6 32,274	9 44,849	7 26,919	6 32,208	0	1 66,300	52 28,879
70+	3	2	3	2	3	4	3	3	2	25
	7,600	59,779	31,741	67,885	55,702	27,803	25,049	27,199	65,586	37,583
Total Employees	616	504	225	170	133	88	80	32	9	1,857
Average Salary	25,035	36,812	40,057	46,139	50,064	62,275	59,656	51,998	56,504	37,645

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Retiree Distribution as of January 1, 2006

	Numbe	er of Employe	ees	Total Payments		
Attained Age	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	0	0	0	0	0
45-49	1	1	2	3,947	4,202	8,149
50-54	4	2	6	96,148	11,192	107,340
55-59	44	14	58	2,303,302	179,334	2,482,635
60-64	76	39	115	3,187,159	549,220	3,736,380
65-69	73	67	140	2,624,322	810,593	3,434,915
70-74	95	89	184	2,306,748	931,695	3,238,444
75-79	112	111	223	2,101,704	960,571	3,062,275
80-84	85	93	178	1,480,191	712,113	2,192,304
85-89	31	53	84	354,297	374,326	728,623
90-94	16	22	38	154,603	156,829	311,433
95-99	4	5	9	25,714	42,750	68,465
al	541	496	1,037	14,638,138	4,732,825	19,370,963
erage (Age/Payment)	73.2	76.2	74.6	27,058	9,542	18,680
quency Percent	52.2	47.8	100.0	75.6	24.4	100.0

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Disabled Retiree Distribution as of January 1, 2006

	Numbe	er of Employe	ees	Total Payments		
Attained						
Age	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	1	0	1	45,453	0	45,453
45-49	6	0	6	142,271	0	142,271
50-54	12	3	15	389,093	14,899	403,992
55-59	29	0	29	1,179,999	0	1,179,999
60-64	39	1	40	1,535,941	8,080	1,544,021
65-69	29	2	31	1,104,818	26,184	1,131,003
70-74	26	0	26	757,353	0	757,353
75-79	18	0	18	491,963	0	491,963
80-84	6	2	8	176,998	36,431	213,429
85-89	8	0	8	226,525	0	226,525
90-94	1	0	1	40,362	0	40,362
95-99	0	0	0	0	0	0
	175	8	183	6,090,776	85,594	6,176,371
ge (Age/Payment)	66.3	65.0	66.2	34,804	10,699	33,751
ency Percent	95.6	4.4	100.0	98.6	1.4	100.0

# **EXHIBIT 4 - CASHFLOW FORECAST:**

The following is a 30 year forecast of benefit payments net of state reimbursable COLA payments, Contribution Income and Investment Returns.

Plan Year	Benefit	Employee	Employer	Investment	Net change in
Ending	Payments	Contributions	Contributions	Returns	plan assets
2006	\$26,736,600	\$5,628,453	\$10,340,234	\$26,863,978	\$16,096,065
2007	\$27,674,311	5,966,840	10,606,555	\$28,123,235	17,022,319
2008	\$28,732,376	6,324,284	10,878,198	\$29,452,292	17,922,398
2009	\$29,877,994	6,701,816	11,155,157	\$30,850,365	18,829,344
2010	\$31,002,211	7,100,518	11,437,414	\$32,322,302	19,858,023
2011	\$32,230,446	7,521,532	11,724,942	\$33,872,947	20,888,975
2012	\$33,384,021	7,966,060	12,017,704	\$35,509,518	22,109,261
2013	\$34,521,100	8,435,363	12,315,644	\$37,244,910	23,474,816
2014	\$35,639,568	8,930,773	12,618,698	\$39,090,856	25,000,760
2015	\$36,773,976	9,453,688	12,926,786	\$41,058,865	26,665,362
2016	\$37,944,492	10,005,580	13,239,810	\$43,159,271	28,460,168
2017	\$39,152,266	10,588,000	13,557,655	\$45,402,481	30,395,869
2018	\$40,398,483	11,202,575	13,880,188	\$47,799,757	32,484,037
2019	\$41,684,368	11,851,022	14,134,821	\$50,360,448	34,661,923
2020	\$43,011,182	12,535,143	6,886,722	\$52,800,056	29,210,739
2021	\$44,380,228	13,256,837	7,032,828	\$55,092,671	31,002,108
2022	\$45,792,852	14,018,100	7,178,139	\$57,527,591	32,930,978
2023	\$47,250,439	14,821,032	7,322,286	\$60,115,805	35,008,684
2024	\$48,754,421	15,667,841	7,464,870	\$62,869,210	37,247,500
2025	\$50,306,275	16,560,850	7,605,460	\$65,800,687	39,660,722
2026	\$51,907,524	17,502,502	7,743,586	\$68,924,180	42,262,744
2027	\$53,559,742	18,495,367	7,878,742	\$72,254,788	45,069,156
2028	\$55,264,549	19,327,659	8,233,286	\$75,800,442	48,096,838
2029	\$57,023,621	20,197,404	8,603,784	\$79,586,497	51,364,065
2030	\$58,838,683	21,106,287	8,990,954	\$83,632,063	54,890,621
2031	\$60,711,519	22,056,070	9,395,547	\$87,957,831	58,697,928
2032	\$62,643,968	23,048,593	9,818,346	\$92,586,204	62,809,175
2033	\$64,637,927	24,085,779	10,260,172	\$97,541,440	67,249,464
2034	\$66,695,353	25,169,639	10,721,880	\$102,849,802	72,045,968
2035	\$68,933,891	26,302,273	11,204,364	\$108,535,189	77,107,935

amounts in thousands

# EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2006, and does not take into account any subsequent changes.

#### 1. Administration

Each of the 107 contributory retirement systems for public employees for the Commonwealth of Massachusetts are guided by the applicable provisions of Chapter 32 of the Massachusetts General Laws and other applicable statutes. Although these boards operate semi-independently, there is a uniform set of rules governing benefits, eligibility, contributions, financing, and accounting.

#### 2. Participation

Participation is mandatory for all full-time employees whose employment commences prior to age 65. Eligibility with respect to part-time, professional, temporary, or intermittent employment is governed by the local board. Membership is optional for certain elected officials, State officials appointed by the Governor, and certain hospital interns.

There are four classes of membership as follows:

- (i) Group 1: Most general employees in State and local government
- (ii) Group 2: Certain specified hazardous duty positions
- (iii) Group 3: State police officers and inspectors
- (iv) Group 4: Local police officers, firefighters, and designated employees of the municipal light department.

For members in more than one group, participation will be proportional.

#### 3. Salary

Salary is defined as gross regular compensation. Salary <u>does not</u> include bonuses, overtime, severance pay, unused sick leave credit, or other similar compensation.

#### 4. <u>Member Contributions</u>

Member contributions vary depending upon date hired as follows:

	Member	
<b>Date of Hire</b>	<b>Contribution Rate</b>	
Prior to 1975	5.0% of Salary	
1975 to 1983	7.0% of Salary	
1984 to 1996	8.0% of Salary	
1996 and Later plus	9.0% of Salary	
1979 and Later	Additional 2.0% of Sala \$30,000	ry in excess of

## 5. Average Salary

Average salary is used to determine a participant's benefit. It is defined as the average salary during the three consecutive-year period that produces the highest average. (Alternatively, if a greater amount results, it is the average rate of salary earned during the period or periods, whether or not consecutive, that constitutes the last three years preceding retirement.)

#### 6. <u>Creditable Service</u>

In general, creditable service is awarded during the period in which a member contributes to the retirement system.

# 7. Service Retirement

#### a. <u>Eligibility</u>:

For an employee to be eligible for service retirement (also referred to as superannuation), one of the following conditions must be met:

- (i) completion of 20 years of service
- (ii) for an employee hired prior to January 1, 1978, attainment of age 55 as an active member
- (iii) for an employee hired on or after January 1, 1978, attainment of age 55 as an active member and completion of ten years of service
- (iv) if an employee is a State Police officer (Group 3), attainment of age 50

#### b. Benefit Amount:

The retirement allowance is determined as a product of the participant's Benefit Rate times Average Salary times Creditable Service, where Benefit Rate is determined from the following table:

Age at	Perce	ntage of Average	Salary
<u>Retirement</u>	Group 1	Group 2	Group 4
<i>(5 0 </i>	025	025	025
65 or Over	.025	.025	.025
64	.024	.025	.025
63	.023	.025	.025
62	.022	.025	.025
61	.021	.025	.025
60	.020	.025	.025
59	.019	.024	.025
58	.018	.023	.025
57	.017	.022	.025
56	.016	.021	.025
55	.015	.020	.025
54	.014	.014	.024
53	.013	.013	.023
52	.012	.012	.022
51	.011	.011	.021
50	.010	.010	.020
49	.009	.009	.019
48	.008	.008	.018
47	.007	.007	.017
46	.006	.006	.016
45	.005	.005	.015
44	.004	.004	.004
43	.003	.003	.003
42	.002	.002	.002
41	.001	.001	.001

For Group 3 (State Police), the benefit is 50% of the participant's final year's rate of regular salary, plus an additional 1% for each year of service in excess of 20 years. In addition, for veterans (all groups) there is an additional benefit of \$15 per year for each year of service, up to a maximum of 20 years of service.

#### 8. Deferred Vested Retirement

#### a. Eligibility:

A participant who has completed ten or more years of creditable service is eligible for a deferred vested retirement benefit. If termination is involuntary, the participant is vested after six years.

#### b. Benefit Amount:

The participant's accrued benefit is payable commencing at age 55, or may be deferred until later at the employee's option.

#### c. <u>Refund of Contributions</u>:

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions. Members with ten or more years of service are entitled to 100% of the credited interest on their contributions. Members with five to ten years of service are entitled to 50% of the credited interest on their contributions. No credited interest is provided for members with less than five years of service.

#### 9. Accidental Disability

#### a. Eligibility:

Participants are eligible for an accidental disability benefit, regardless of service or age, if they become permanently and totally incapacitated for further duty as a result of personal injury sustained while in the performance of duties.

#### b. Benefit Amount:

The accidental disability amount is 72% of annual salary plus \$450 per year for each child plus an additional annuity based upon accumulated Member Contributions with credited interest.

#### 10. Ordinary Disability

#### a. Eligibility:

An ordinary disability occurs when a member becomes permanently and totally disabled due to sickness or injury that is not job related. In order to be eligible for an ordinary disability benefit, a member must have ten years of service (and be less than age 55).

#### b. Benefit Amount:

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55. If the member was a veteran, the benefit is 50% of the member's final rate of Salary during the preceding 12 months, plus an annuity based upon accumulated Member Contributions plus credited interest. If the participant is over age 55, he will receive not less than the superannuation allowance to which he is entitled.

#### 11. Survivor Benefits

#### a. Occupational Death:

The survivors of a member who dies due to an occupational injury will be entitled to a lump sum return of contributions plus a pension benefit equal to 72% of the participant's annual Salary.

#### b. Non-Occupational Death:

Upon the death of a member other than due to an occupational injury, the designated beneficiary will be entitled to a retirement benefit as if Option C had been elected with a minimum of \$250 per month to the surviving spouse, plus \$120 for the first child, plus \$90 for each additional child. If no beneficiary is designated and if the employee worked two years, and is married at least one year, the spouse may elect benefits. If there is no designated beneficiary or surviving spouse, then member contributions are returned. If there are dependent children but no surviving spouse, they may elect minimum survivor benefits of \$250 per month plus \$120 for the first child and \$90 for each additional child.

#### c. Refund of Contributions:

Upon the death of a member not entitled to survivor benefits, the beneficiary is entitled to a refund of all member contributions with interest.

#### 12. Cost-of-Living Increases

In accordance with the adoption of Chapter 17 of the Acts of 1997, the granting of a cost-of-living adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees, and beneficiaries who have been receiving benefits payments for at least one year as of July 1 are eligible for the adjustment. The maximum amount of pension benefit subject to a COLA is \$12,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the State and are not the liability of the Retirement System.

#### 13. Postretirement Death Benefits

Any benefits following the death of a member after retirement are based upon the form of benefit the participant elected at the time of retirement. There are three available forms as follows:

- (i) Option A Life annuity
- (ii) Option B Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member
- (iii) Option C Life annuity with 66-2/3% of benefit continued after death of member to designated joint annuitant

# EXHIBIT 6 – ACTUARIAL METHODS AND ASSUMPTIONS:

The actuarial cost method, factors, and assumptions used in determining cost estimates are presented below.

#### 1. Member Data

The member data used in the determination of cost estimates consist of pertinent information with respect to the active, inactive, retired, and disabled members of the employer as supplied by the employer to the actuary.

#### 2. <u>Valuation Date</u>

January 1, 2006.

#### 3. Actuarial Cost Method

The costs of the Plan have been determined in accordance with the individual entry age normal actuarial cost method.

#### 4. Rate of Investment Return

It is assumed that the assets of the fund will accumulate at a compound annual rate of 8.0% per annum.

#### 5. Cost-of-Living Increases

Cost-of-living increases have been assumed to be 3.0% of the lesser of the pension amount and \$12,000 per year.

## 6. Salary Scale

The assumed annual rates for salary increases including longevity are illustrated by the following rates:

General	Police and Fire
<b>Employees</b>	<b>Employees</b>
7.00%	8.00%
6.50%	7.50%
6.50%	7.00%
6.00%	6.50%
6.00%	6.00%
5.50%	6.00%
5.50%	5.50%
5.00%	5.50%
5.00%	5.25%
4.75%	5.25%
	Employees 7.00% 6.50% 6.50% 6.00% 6.00% 5.50% 5.50% 5.00%

# 7. <u>Value of Investments</u>

Assets held by the fund are valued at market value as reported by the Public Employees' Retirement Administration Commission (PERAC).

#### 8. Annual Rate of Withdrawal Prior to Retirement

Based on an analysis of experience, the assumed annual rates of withdrawal may best be illustrated by the following rates at the following ages:

	General	Police and Fire
<b>Service</b>	<b>Employees</b>	<b>Employees</b>
0	0.150	0.015
1	0.120	0.015
2	0.100	0.015
3	0.090	0.015
4	0.080	0.015
5	0.076	0.015
10	0.054	0.015
15	0.033	0.000
20	0.020	0.000
25	0.010	0.000
30+	0.000	0.000

## 9. Annual Rate of Mortality

It is assumed that both preretirement and postretirement mortality are represented by the RP-2000 Mortality Table for males and females. Mortality for disabled members is represented by the RP-2000 Mortality Table set forward two years for all disabled members.

# 10. Service Retirement

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages:

	Male	Female	Male and Female
	General	General	<b>Police and Fire</b>
<b>Age</b>	<b>Employees</b>	<b>Employees</b>	<b>Employees</b>
50	0.0100	0.0150	0.02000
51	0.0100	0.0150	0.02000
52	0.0100	0.0200	0.02000
53	0.0100	0.0250	0.05000
54	0.0200	0.0250	0.07500
55	0.0200	0.0550	0.15000
56	0.0250	0.0650	0.10000
57	0.0250	0.0650	0.10000
58	0.0500	0.0650	0.10000
59	0.0650	0.0650	0.15000
60	0.1200	0.0500	0.20000
61	0.2000	0.1300	0.20000
62	0.3000	0.1500	0.25000
63	0.2500	0.1250	0.25000
64	0.2200	0.1800	0.30000
65	0.4000	0.1500	1.00000
66	0.2500	0.2000	1.00000
67	0.2500	0.2000	1.00000
68	0.3000	0.2500	1.00000
69	0.3000	0.2000	1.00000
70	1.0000	1.0000	1.00000

#### 11. Annual Rate of Disability Prior to Retirement

Based on an analysis of experience, the assumed annual rates of disability may best be illustrated by the following probabilities at the following ages:

Attained <u>Age</u>	General <u>Employees</u>	Police and Fire Employees
20	0.0001	0.0010
30	0.0003	0.0030
40	0.0010	0.0030
50	0.0019	0.0125

In addition, it is assumed for the general employees that 45% of all disabilities are ordinary (55% are service connected). For police and fire employees, 10% of all disabilities are assumed to be ordinary (90% are service connected).

# 12. Family Composition

It is assumed that 80% of all members will be survived by a spouse and that females (males) are three years younger (older) than members.

#### 13. Administrative Expenses

The normal cost is increased by an amount equal to the anticipated administrative expenses for the upcoming fiscal year. The amount for fiscal year 2006 is \$600,000 and is anticipated to increase at 4.5% per year.

# EXHIBIT 7 – GLOSSARY OF TERMS:

This glossary summarizes the technical terms contained in this report.

#### 1. Actuarial Accrued Liability

That portion of the Actuarial Present Value of plan benefits that is not provided for by future employer Normal Costs or employee contributions.

#### 2. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting the Retirement System such as:

- Rates of investment returns
- Increases in a member's salary
- Inflation
- The probability of mortality, turnover, disablement
- Retirement at each age and other relevant items

#### 3. Actuarial Cost Method

A procedure for allocating the Actuarial Present Value of pension plan benefits between Normal Cost and Actuarial Accrued Liability.

#### 4. Actuarial Present Value

The single sum amount required at the valuation date that is required to provide for anticipated future events based upon the terms of the plan and the Actuarial Assumptions.

#### 5. Forecast

A projection of future benefit payments or contribution requirements based upon the terms of the plan, the current asset amounts, the Actuarial Assumptions, and additional assumptions as to the replacement of terminating employees with new employees.

#### 6. Normal Cost

That portion of the Actuarial Present Value of future benefits that is assigned to the current year.

## 7. <u>Unfunded Actuarial Accrued Liability</u>

That portion of the Actuarial Accrued Liability that is not provided for by current actuarial value of assets.

#### 8. Valuation Method

The method used to divide the cost of future benefits among the Actuarial Accrued Liability, the current year's Normal Costs, and future years' Normal Costs. The resulting current funding requirement is then determined as the current year's Normal Cost plus the payment necessary to amortize the Unfunded Actuarial Liability.

## 9. Vested Liability

That portion of the Actuarial Present Value of Accrued Benefits that a member would be entitled to if the member terminated employment with the employer as of the valuation date.

# **CERTIFICATION:**

This report fairly represents the actuarial position of the City of Brockton Retirement System contributing as of January 1, 2006, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost is reasonably related to plan experience and to reasonable expectations, and represents our best estimate of anticipated plan experience.

**Buck Consultants, LLC** 

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Daniel W. Sherman, ASA, MAAA Enrolled Actuary No. 05-4086

June 2006

# **BREAKOUTS**

Brockton Contributory Retirement System

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# **Breakouts**

	<u>Total</u>	All Others/City of Brockton	Brockton Redevelopment Authority	Private Industry Council	Brockton Housing Authority
(1) Participants					
(a) Actives	1,857	1,750	3	29	75
(b) Retirees and Beneficiaries	1,037	977	2	11	47
(c) Vested	0	0	0	0	0
(d) Inactive (Refund)	246	222	1	18	5
(e) Disabled Retirees	<u>183</u>	<u>178</u>	<u>1</u>	<u>1</u>	<u>3</u>
(f) Total	3,323	3,127	7	59	130
(2) Payroll of Active Participants	69,892,659	64,980,672	191,444	1,159,334	3,561,209
Percent of Total Payroll	100.00%	92.97%	0.27%	1.66%	5.10%
(3) Normal Cost					
(a) Total Normal Cost	9,746,903	9,206,638	8,681	149,724	381,858
(b) Expected Employee Contributions	5,628,453	5,254,540	7,507	97,361	269,045
(c) Administrative Expenses	600,000	<u>566,742</u>	<u>534</u>	<u>9,217</u>	<u>23,506</u>
(d) Net Employer Normal Cost (a) - (b) + (c)	4,718,450	4,518,840	1,708	61,580	136,319
(4) Actuarial Accrued Liability	399,505,110	377,729,612	1,239,118	3,909,169	16,627,204
(5) Assets*	346,311,739	332,744,231	772,049	2,435,660	10,359,800
(6) Unfunded Actuarial Accrued Liability (4) - (5)	53,193,371	44,985,381	467,069	1,473,509	6,267,404
(7) Amortization of unfunded accrued liability	5,161,742	4,365,261	45,323	142,985	608,172
(8) ERI	69,703	0	0	0	69,703
(9) Total Required Employer Contributions (3d) + (7)+(8)	9,949,895	8,884,101	47,031	204,565	814,194
(10) Fiscal 2007 Cost	10,340,234	9,232,629	48,876	212,590	846,135
(11) Fiscal 2007 Cost - Assuming late payment for PIC and Housing	10,382,579	9,232,629	48,876	221,094	879,980
(12) Fiscal 2008 Cost	10,606,555	9,470,423	50,135	218,066	867,928
(13) Percentage of total	100.00%	89.29%	0.47%	2.06%	8.18%

<sup>\*</sup> Allocation of assets based on the ratio of the Actuarial Accrued Liability, adjusted by a credit of \$97,394,772 for the City of Brockton